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JUN 15 2006

REMARKS

Claims 1-36 are pending in the present application. In the Office Action, claims 1-4, 7-17, 19-24, 26-29, 31-34, and 36 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Bary (U.S. Patent Application Publication No. 2003/0117893) in view of Stephen (U.S. Patent No. 6,430,105). The Examiner's rejections are respectfully traversed.

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. That is, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). A recent Federal Circuit case emphasizes that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35.

Bary describes a conventional ocean-bottom cable type seismic prospecting method that uses a seismic cable or streamer laid on the sea bottom. See Bary, paragraph [0004]. Bary also describes an alternative seismic prospecting method in which seismic data acquisition units are launched from the surface and descend through the water column to stick into the sea bottom. The seismic data acquisition units may include inclinometers for measuring their orientation and compasses. See Bary, paragraphs [0008-0009]. However, as admitted by the Examiner, the seismic data acquisition units described by Bary are not coupled to an ocean-bottom cable. Furthermore, Applicants respectfully submit that a person of ordinary skill in the art will

appreciate that Bary implicitly teaches that the free-falling seismic data acquisition units are to be used as an alternative to ocean-bottom cables when the use of ocean-bottom cables is disadvantageous.

Stephen describes the use of ocean-bottom cables in seismic surveying. Stephen describes sensor units 1 that may be attached to an ocean-bottom cable. Each of the sensor units 1 includes three accelerometers 5, 6, 7 that may be used to measure steady-state accelerations related to the acceleration of gravity. See Stephen, col. 4, ll. 15-21.

The Examiner alleges that it would be obvious to place the sensor units described by Bary onto an ocean-bottom cable, such as the cable described by Stephen. In particular, the Examiner alleges that it would have been obvious to modify Bary to include placing the sensor units onto a seismic cable as taught by Stephen instead of having them as individual units in order to be able to lay down the sensor units on the sea floor in a desired array from a survey vessel. In particular, the Examiner alleges in the Final Office Action that Stephen teaches that it would be desirable to have sensors in a seismic cable in order to be able to lay down the sensor units on the seafloor in a desired array.

Applicants respectfully disagree and submit that neither Bary nor Stephen provides any suggestion or motivation to couple the kind of sensor units described by Bary to an ocean-bottom cable. In particular, neither Bary nor Stephen provides any teaching that the sensor units described by Bary should be coupled to an ocean-bottom cable in order to be able to lay the sensor units described by Bary on the sea floor in a desired array from a survey vessel, as suggested by the Examiner. To the contrary, Stephen teaches that a different kind of sensor, *i.e.*, the sensor units 1, should be coupled to the ocean-bottom cable.

Furthermore, Bary teaches away from coupling the sensor units described by Bary to an ocean-bottom cable. Bary states ocean-bottom cables are conventionally used for seismic processing. Thus, Stephens' description of ocean bottom cables is also found in Bary but Bary nevertheless fails to describe or suggest the Examiner's proposed modification. To the contrary, Bary teaches that the coupling of the seismic pickups with the sea bottom is not optimal unless the ocean bottom cables are buried in the sediment. See Bary paragraph [0004]. Bary therefore teaches that a conventional *alternative* to ocean-bottom cables, an alternative which is incompatible with ocean bottom cables, is to launch individual seismic data acquisition units from a surface acquisition unit and so that the seismic data acquisition units directly stick into the bottom under the effect of gravity. See Bary paragraphs [0008-0009]. Thus, Bary teaches away from the Examiner's proposed combination of a free-falling seismic data acquisition unit and an ocean-bottom cable. It is by now well established that teaching away by the prior art constitutes *prima facie* evidence that the claimed invention is not obvious. *See, inter alia, In re Fine*, 5 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1988); *In re Nielson*, 2 U.S.P.Q.2d (BNA) 1525, 1528 (Fed. Cir. 1987); *In re Hedges*, 228 U.S.P.Q. (BNA) 685, 687 (Fed. Cir. 1986).

Moreover, even if the elements of Bary and Stephen are combined in the manner suggested by the Examiner (and Applicants reiterate that the prior art contains no suggestion or motivation to do so), the proposed combination still fails to describe or suggest all the limitations of the claimed invention. In particular, neither of the cited references provide any suggestion or motivation for determining whether the at least one ocean bottom cable has moved from the at least one initial inclination and the at least one current inclination.

As discussed above, Bary states that the seismic acquisition device should be shaped to descend, under the effect of gravity, to the bottom of the water mass and to enter the bottom so

as to couple the seismic receivers with the underground formation. See Bary, paragraph [0029]. Applicants respectfully submit that the person of ordinary skill in the art would understand that the seismic data acquisition device described by Bary is intended to be buried in the sea bottom and therefore would not be expected to move during the seismic data acquisition process and it would therefore be unnecessary to determine whether or not the seismic acquisition device has moved.

In response to the above argument, the Examiner alleges that Bary describes determining orientation and also determining coupling and settling of the device before seismic data is taken. The Examiner therefore appears to be alleging that Bary inherently describes determining if the sensors have moved. However, Applicants note that inherency may not be used in an obviousness determination. Inherency and obviousness are not synonymous since "[t]hat which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown." *Newell*, at 1250, quoting *In re Spormann*, 150 U.S.P.Q. (BNA) 449, 452 (C.C.P.A. 1966); *In re Rijckaert*, 28 U.S.P.Q.2d (BNA) 1955, 1957 (Fed. Cir. 1993), also quoting *Sporman*, at 452. "[O]ne cannot choose from the unknown." *In re Ochiai*, 37 U.S.P.Q.2d (BNA) 1127, 1131 (Fed. Cir. 1995), quoting *In re Mancy*, 182 U.S.P.Q. (BNA) 303, 306 (C.C.P.A. 1974). "Such a retrospective view of inherency is not a substitute for some teaching or suggestion supporting an obviousness rejection." *Rijckaert*, at 1957.

Stephen also teaches that the accelerometers 5, 6, 7 are to be used to determine the steady-state acceleration due to gravity proximate the sensor 1 so that the steady-state acceleration due to gravity may be separated from the time varying signals due to seismic vibrations. See Stephen, col. 4, ll. 31-35. Thus, Stephen also assumes that the seismic sensors 1, as well as the cable 2, are in the steady-state, *i.e.*, they are not moving. Thus, Stephen teaches

that it would be unnecessary to determine whether or not the seismic sensors or cables have moved.

In response to the above arguments, the Examiner alleges that Stephen teaches that the seismic cable must have settled before the seismic data is taken in that orientation of the sensors is determined in real-time. The Examiner then alleges (without record support) that recording the orientation of the sensors in real-time *would* show a change in the orientation of the sensors *if* the sensors moved. Again, the Examiner appears to be arguing that Stephen inherently describes determining that the seismic sensors or cables have moved. However, Applicants again note that inherency may not be used in an obviousness determination. Furthermore, the fact that movement of the sensors may cause variations in the orientation of the sensors does not necessarily mean that the variations in sensor orientation would or could be used to determine that the sensors have moved. Fluctuations in the sensor orientation may simply be interpreted as noise and may not be used to determine that the sensors have moved. In other cases, the fluctuations in the sensor orientation may even be filtered out so that it would be impossible to use this information to determine whether or not the sensors have moved.

For at least the reasons discussed above, Applicants respectfully submit that the prior art of record fails to teach or suggest all the claim limitations and also fails to provide any suggestion or motivation for the Examiner's proposed modifications of the prior art. Thus, Applicants respectfully submit that the Examiner is using the present application as a roadmap for combining disparate elements selected from the cited references. For example, the Examiner attempts to support the conclusion that the present invention is obvious over the cited references by noting that that ocean currents, tides, and changing sands *could* cause the orientation and coupling of a sensor to change. However, Applicants note that the cited references are

completely silent with regard to the possible movement of the sensors. To the contrary, as discussed above, the sensors described by Bary are designed to prevent them from moving once they are embedded in the sea floor. The only teaching that the sensors may move and that it may be desirable to determine when or if the sensors have moved is provided by the present application.

For at least the aforementioned reasons, Applicants respectfully submit that the Examiner has failed to make a *prima facie* case that the present invention is obvious over Bary and Stephen, either alone or in combination. Applicants request that the Examiner's rejections of claims 1-4, 7-17, 19-24, 26-29, 32-34, and 36 under 35 U.S.C. 103(a) be withdrawn.

In the Office Action, the Examiner indicated that claims 5-6, 18, 25, 30, and 35 contain allowable subject matter but that these claims were objected to as being dependent upon a rejected base claim. Pursuant to the above arguments, Applicants respectfully submit that claims 5-6, 18, 25, 30, and 35 are in condition for allowance.

For the aforementioned reasons, it is respectfully submitted that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

Date: 6/15/06

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